

EAHCP STEWARD

News from the Edwards Aquifer Habitat Conservation Plan - September 2019

Profiling a Parasite

EAHCP continues to monitor *Haplorchis* parasite to protect endangered fountain darters

While it might be handy to have a biology degree to understand the life cycle of the *Haplorchis pumilio* parasite, you don't have to look very hard to see the type of damage it can do to a small fish like the endangered fountain darter. The question is, what are the chances that this parasite can impact the fountain darter population at the Comal and San Marcos Springs?

"We have known about the *Haplorchis* parasite being in Landa Lake for about 10 years now," said BIO-WEST, Inc. aquatic ecologist Brad Littrell. "However, we were focused on another parasite called

Centrocestus formosanus, thinking that it was a greater problem for the fountain darter. As we studied *Centrocestus*, we came upon *Haplorchis* and have continued to carefully document the concentrations of the free-swimming parasites in the water as well as concurrently monitor the fountain darter populations."

The Edwards Aquifer Habitat Conservation Plan (EAHCP) is currently in its sixth year of implementation and its numerous programs are designed to protect, enhance, and conserve the Comal and San Marcos Springs systems where endangered species, like the fountain darter, inhabit. BIO-WEST, Inc. is the biological consulting group working with EAHCP partners to implement riparian and aquatic restoration efforts in these systems. In addition to spring and habitat protection programs, there is a robust biological monitoring program that not only assesses the effectiveness of the conservation activities but can quickly adapt to assess emerging issues like parasite problems.



Brad Littrell in lab measuring concentration of parasites in a water sample.

***Haplorchis* parasite - Continued**

It is thought that the *Haplorchis* parasite was introduced to the Comal River, San Marcos River and other aquatic environments in the region by people dumping aquariums with exotic snails in rivers. The red-rimmed melania snail, *Melanoides tuberculata*, is a favorite for home aquariums due to their bright colors. However, that snail, which comes from Asia, is the perfect host for exotic trematode parasites.

The adult parasites, or flukes, live in the intestine of a fish-eating bird. Parasite eggs can be contained in bird droppings.



Photo from Texas State showing the effects on a blacktail shiner fish infected by the *Haplorchis* parasite.

The *Haplorchis* parasite targets and infects the soft tissue surrounding the fin areas of fish. Under high densities, the parasite can greatly reduce the ability of the fish to control its fins and jaws. That makes it more difficult for the infected fish to find food and makes it easier prey for other fish. Laboratory studies have shown very high concentrations of the parasite in fish can cause them to die within days.

"Dr. David Huffman, a parasitologist, and graduate student Allison Scott at Texas State [University] are currently doing some focused research on the *Haplorchis* parasite and its potential impacts to the fountain darter," said EAHCP Chief Science Officer Dr. Chad Furl. "We are sharing our data with them and we are interested to see how things develop with their work, which should be completed over the next several months. While we know *Haplorchis* infects fountain darters in the wild, our bio-monitoring studies over the last several years show that the populations of fountain darters are robust and stable. So, that's good news. However, you always have to be vigilant about the potential for parasite populations to grow as well. And we are watching this very closely."

According to Dr. Huffman, Texas State University's research will include elements of lab experiments as well as testing in the wild. Researchers are planning to infect fish at various concentrations and measure the impacts. In preliminary studies, researchers found that higher concentrations of snails in the Comal River also produced higher levels of the parasites, potentially infecting more fish in that particular area.

"One of the factors we must certainly be aware of is low flows in the Comal Springs," Furl noted. "For the past year or so, above average rainfall has produced very high flows in the springs and higher flows amount to more dilution of water column cercaria. But, clearly we know that South Texas droughts are very common and so we need to be prepared for eventual low flows in the Comal Springs and how that could be a problem for parasites becoming more dense there as well."

The Comal and San Marcos Rivers are not only homes for the fountain darter. They also sustain substantive recreational activities throughout the year. So, if the *Haplorchis* parasite is bad for the fountain darter, can there be any problems for humans who recreate in the Comal and San Marcos Rivers?

"The only way for humans to become infected with this parasite is for them to eat raw fish right out of the river that carries the *Haplorchis*," Littrell confirmed. "So, there should be no worries with people having fun on and along the rivers. However, we should remind people who own aquariums that they should not be dumping them into wild areas like this. In fact, it is illegal to do so in New Braunfels for the reasons we've been talking about."

EAHCP STEWARD SHORT TAKES

4th Annual River Guardianship Symposium a Success

On September 11, 2019, EAHCP Staff participated in the 4th Annual River Guardianship Symposium hosted by the San Marcos Mermaid Society. This year's panel discussions featured the topic of "Nature and Nurture: Cultivating Community Guardianship". EAHCP participated as an exhibitor along with 12 other local river stewardship and volunteer organizations. Additionally, Melani Howard, HCP Manager for the City of San Marcos, received the River Guardianship Honoree award. Congratulations Melani and a special thank you to the San Marcos Mermaid Society for hosting such an important event!

Dos Rios Watershed Clean-Up Set for Sept. 21

The City of New Braunfels, with the help of local partners and sponsors, is hosting the 3rd Annual Dos Rios Watershed Clean-Up on Saturday, September 21st from 9 AM until noon. In case of inclement weather on September 21st, October 5th has been selected as a rain date for the event. This year the City of New Braunfels is partnering with Headwaters at the Comal. The Headwaters at the Comal grounds will be our morning meeting location, a clean-up location, and where everyone will meet for lunch once the clean-up has wrapped up. [You can read more about the event and sign up for activities at this link.](#)

Sessom Workday in San Marcos - Sept. 28

The next Sessom Workday is scheduled for Saturday, September 28, from 8-10 am. Tasks include removing invasive ligustrum, constructing contour terracing, dragging small brush to be chipped, pulling invasive seedlings, broadcasting native seed and removing trash. Meet at Vie Lofts (formerly Ella Lofts) parking lot (817 Chestnut St). Parking will be available at six designated spots in the parking lot or along street. **Wear closed toed shoes.** Tools will be provided. Kolaches and coffee will be provided beforehand by our sponsor Dos Gatos Bakery. RSVP to eweeks@sanmarcostx.gov.

EAHCP Implementing and Stakeholder Committees to Meet in October

A meeting of the EAHCP Stakeholder and Implementing Committees will be held on October 3, 2019 at the Edwards Aquifer Authority at 10 a.m. As a reminder the meeting will be available to live stream at this link. <https://edwardsaquifer.legistar.com/Calendar.aspx>

Keep San Marcos Beautiful Sponsoring the 2019 Fall River Clean Up Oct. 5

The 2019 Fall River Clean Up is Saturday, October 5th! Registration will begin at 8:30am at your clean up location's headquarters and the clean up will begin at 9am. Lunch and a free T-shirt will be provided.

T-shirts are available on a first come, first served basis. If you want your size, make sure to show up early! Please carpool if you can and if you would like to, bring a filled water bottle. If you are volunteering in the Cottonwood Creek area, please wear waders or shoes and clothes you don't mind getting wet. If you are signing up as an organization, please sign up with your organization name, an appropriate email address, and number of people expected to attend. [You can find out more about the event at this link.](#)